

BUFFALO FORGE COMPANY

ENGINEERS and MANUFACTURERS

BUFFALO, N. Y.

SPECIFICATIONS

NIAGARA CONOIDAL FAN

Furnish No. Niagara Conoidal (Type "N") Single (or double) width seven-eighths (or full) housing fan to deliver cu. ft. of air per minute against "static pressure measured at the fan outlet by standard pitot tube method under actual operating conditions. Static pressure at any point in the fan outlet shall not be more than 15% above or below the average static pressure.

Blast wheel is to be of the forward curved multiblade type with formed blades having a varying radial depth from front to back. The heel or inner edge of the blades to be so arranged as to give a decreasing inlet diameter from front to back, in order to maintain a uniform radial velocity through the wheel. The angle of the blades at entrance shall vary across the width in order to prevent loss by shock. The curvature of the blades shall be such that at normal or rated capacity the air will leave the tips with a velocity pressure approximately twice the pressure corresponding to the peripheral velocity of the wheel, in order to reduce the required speed of rotation.

In order to obtain the greatest possible conversion from velocity head at tip of blades into static pressure at fan outlet, the inner edge of the outlet shall be approximately tangent to the periphery of the wheel, and the height of the outlet shall be approximately equal to the wheel diameter.

Fan to have one (or two) inlet " diameter, and outlet " x ". If a double width fan is used, the wheel is to be composed of two separate single width wheels mounted back to back. Each inlet is to be fitted with an inlet cone in the space between housing and wheel, having a minimum clearance with the flared inlet of the blast wheel.

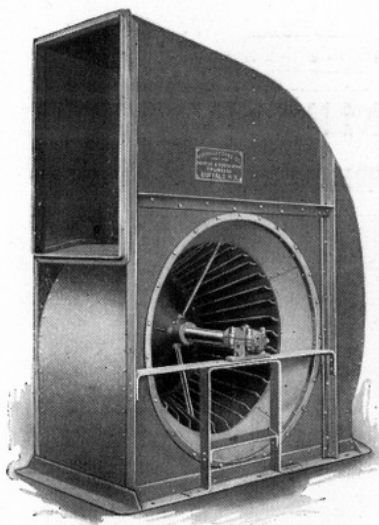
Blast wheel to be carefully balanced to prevent vibration.

Housing to be constructed of the best commercial steel plate No. gauge, with riveted lap seams, and braced by vertical and horizontal angle irons " x ", and with angle iron base frame " x " drilled for holding-down bolts.

Blast wheel to have 32 blades of No. gauge steel plate, each blade supported at the back from a steel disk hot-riveted to a conical cast iron hub, and connected at the inlet side to a conical flange which is further stiffened and supported by tie rods to the hub. The radial depth of each blade at the back shall be at least twice the depth at the front or inlet end of the wheel, thus insuring strength and stiffness. Wheel to be keyseated and set screwed to the shaft. Diameter of the blast wheel to be ".

Bearings to be of the spherical self-aligning type double ring-oiling and designed so as to be dust proof and prevent oil being drawn out by suction of air. Safety set collars to be entirely enclosed within the bearings.

Shaft to be of steel, and the blast wheel secured to same by key and set screws.



Three-Quarter Housing Niagara Conoidal Fan,
Left-Hand Top Horizontal Discharge,
for Overhung Pulley or Direct Connection.

The Niagara Conoidal Type "N" multiblade fan derives its name from the prevalence of conical shapes in its design. The inlet is conical, the blast wheel forms the frustrum of a cone, and the blades are curved over the tapering surface of a cone. All parts of this fan have been very carefully designed to give best efficiency under practical operating conditions. The wheels, blades and hub are designed so as to give the air a smooth easy flow without abrupt change of direction at any point. Also with this design, the back part of the blade cannot take up the greater part of the air which prevents uneven pressure and eddy currents and the air is distributed evenly over all parts of the blade.

Tests which we have made on various sizes of this fan show a very uniform velocity over the fan outlet and our standard guarantee is that velocity of air issuing from any part of the fan outlet as measured by a Pitot tube is not more than 15% above or below the average velocity. These fans are designed so as to make 100% of the outlet effective, and capacities which we give are for actual operating, not laboratory conditions.

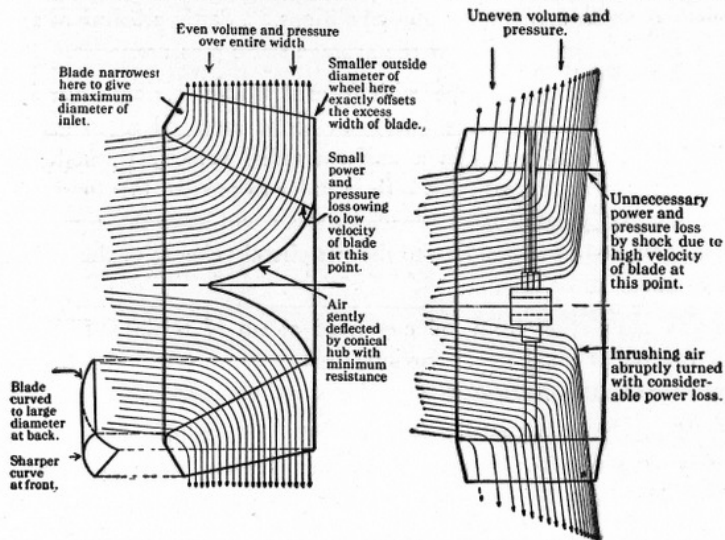
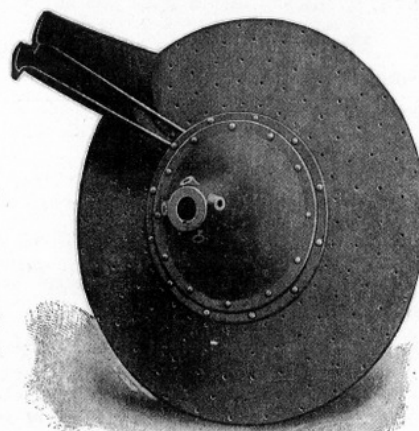


Diagram Showing Advantages of Niagara Conoidal over the
Multiblade Fans in Handling Air

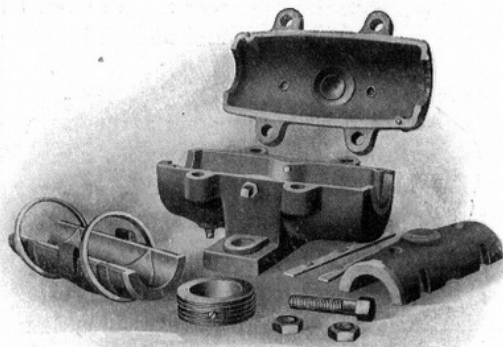


Back Plate and Hub

BEARINGS

Bearings are dust proof and oil tight and consist of a split sleeve lined with babbitt and completely encased in bearing housing. The two halves of the sleeve are mounted between spherical surfaces which allow the bearing to adjust itself in every direction and the housing provides a large oil reservoir in which two oil rings dip; over-filling of the bearing is prevented by the position of the opening through which the oil is supplied and which also indicates the oil level.

In the interest of safety the thrust collar is placed inside the bearing housing, running against a babbitted shoulder; grooves on the outside surface of the thrust collar throw off all oil and absolutely prevent it from creeping along the shaft and being drawn into the fan.

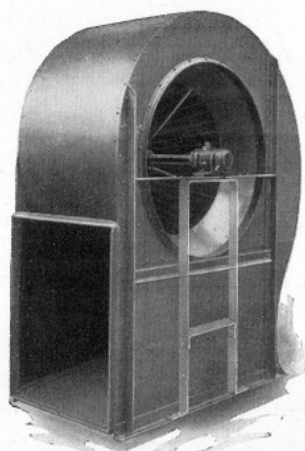


See Catalog 201 for more detail information relative Niagara Conoidal Fans

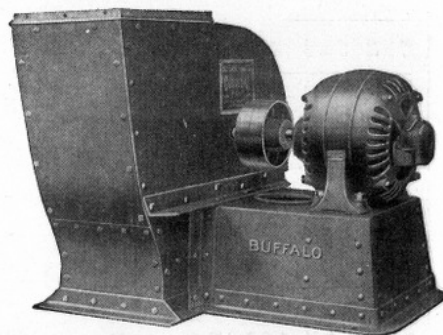
STANDARD ARRANGEMENTS

In ordering fans, specify hand, discharge, type of drive, whether overhung pulley or overhung wheel is wanted, full or three-quarter housing, etc.

The "hand" of a fan is determined by the location of the drive side when one stands facing the outlet end of the fan. If the pulley, motor or engine is on the left, it is called "left hand"; if on the right, "right hand."



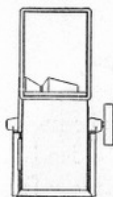
Full Housing Niagara Conoidal Fan, Left-Hand Bottom Horizontal Discharge, for Overhung Pulley or Direct Connection



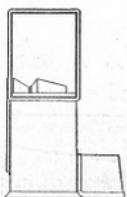
Full Housing Niagara Conoidal Fan, Right-Hand Up Discharge and Electric Motor

No. 1. FOR BELT DRIVE

Single fan. Pulley overhung. Includes housing, wheel, shaft, two bearings and pulley.



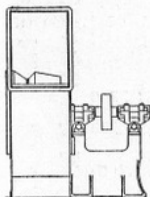
No. 1



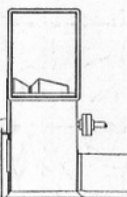
No. 3

No. 2. FOR BELT DRIVE

Single fan. Wheel overhung. Includes housing, wheel, shaft, two bearings, pedestal and pulley



No. 2



No. 4

No. 3. FOR DIRECT CONNECTION

Single fan. Includes housing, wheel and base. Wheel is overhung on engine or motor shaft.

No. 4. FOR DIRECT CONNECTION

Single fan. Includes housing, wheel, shaft, bearing in fan inlet, flanged coupling and base.

No. 5. FOR DIRECT CONNECTION

Single fan. Includes housing, wheel, shaft, bearing on drive side of fan, flanged coupling and base.

No. 6. FOR DIRECT CONNECTION

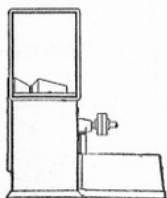
Single fan. Includes housing, wheel, shaft, two bearings, flexible coupling and base.

No. 7. FOR BELT DRIVE

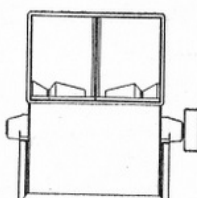
Double fan. Pulley overhung. Includes housing, wheel, shaft, two bearings and pulley.

No. 8. FOR DIRECT CONNECTION

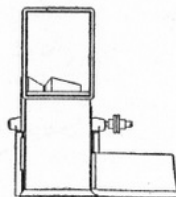
Double fan. Includes housing, wheel, shaft, two bearings, coupling and base.



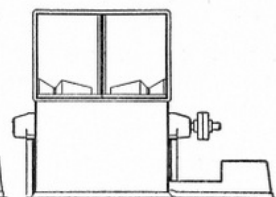
No. 5



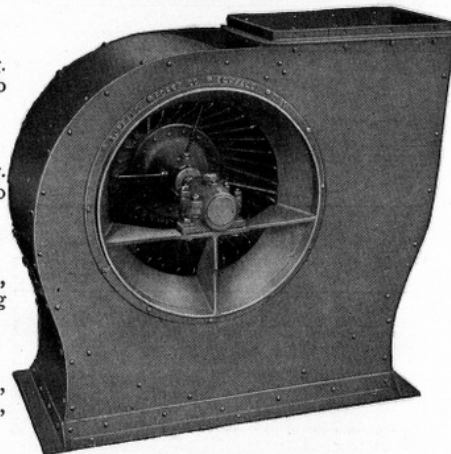
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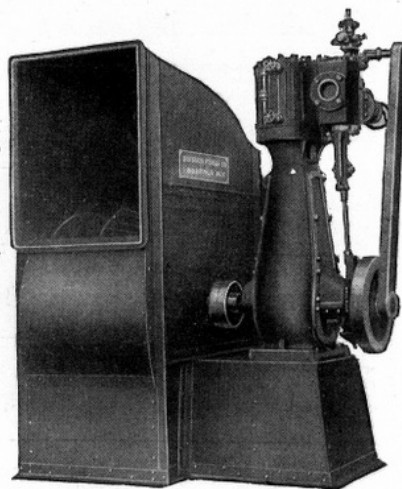
No. 6



No. 8

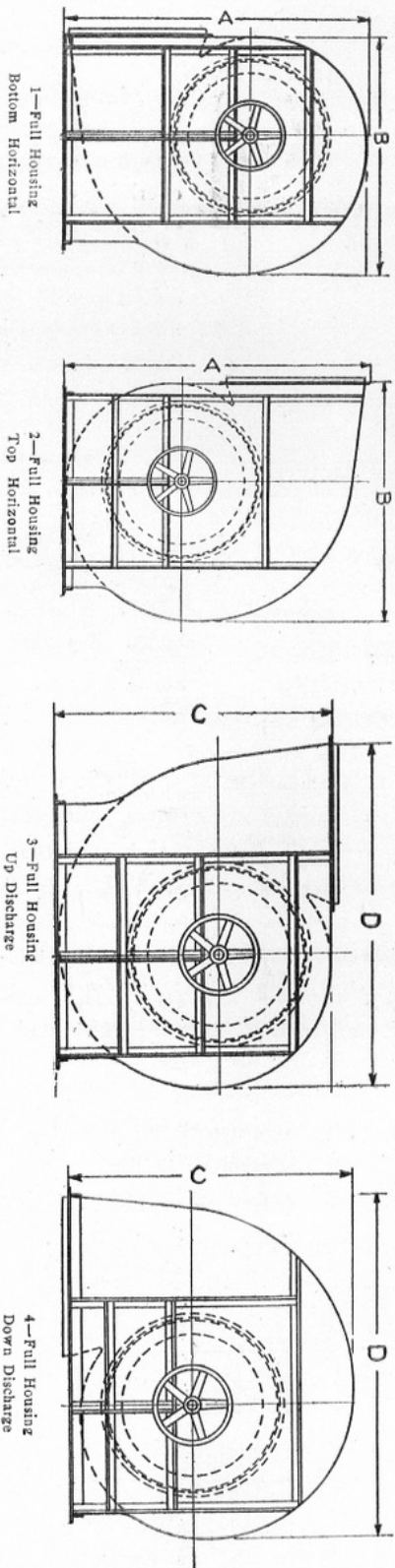


No. 3 to No. 6 Niagara Conoidal Fan, Right Hand Up Discharge



Full Housing Niagara Conoidal Fan, Right-Hand Top Horizontal Discharge and Class "A" Engine

STANDARD DISCHARGES, GENERAL DIMENSIONS AND CAPACITIES OF NIAGARA CONOIDAL (TYPE N) FANS UNDER AVERAGE WORKING CONDITIONS



SEVEN THREE QUARTER HOUSING FANS CAN BE FURNISHED FOR ANY DISCHARGE EXCEPT DOWN BLAST

Size	Size of Outlet	Size of Inlet	A	B	C	D	$\frac{1}{2}$ " Total Press. or 0.217 Oz.			$\frac{3}{4}$ " Total Press. or 0.258 Oz.			1" Total Press. or 0.360 Oz.			$1\frac{1}{4}$ " Total Press. or 0.433 Oz.		
							Rev.	Vol.	H. P.	Rev.	Vol.	H. P.	Rev.	Vol.	H. P.	Rev.	Vol.	H. P.
3	12	15 $\frac{1}{4}$	35 $\frac{1}{4}$	27 $\frac{1}{4}$	28 $\frac{1}{4}$	34 $\frac{1}{4}$	413	1490	0.13	478	1730	0.19	533	1930	0.27	585	2110	0.35
3 $\frac{1}{2}$	14	18 $\frac{3}{8}$	40 $\frac{1}{4}$	31 $\frac{1}{4}$	32 $\frac{1}{4}$	38 $\frac{1}{4}$	354	2038	0.17	409	2350	0.26	457	2620	0.37	501	2870	0.48
4	16	21	46 $\frac{3}{4}$	36 $\frac{1}{4}$	37 $\frac{3}{4}$	45 $\frac{3}{4}$	310	2650	0.22	368	3070	0.34	400	3430	0.48	439	3750	0.63
4 $\frac{1}{2}$	18	23 $\frac{3}{4}$	52 $\frac{3}{4}$	40 $\frac{3}{4}$	41 $\frac{1}{4}$	51 $\frac{1}{4}$	276	3360	0.28	315	3880	0.43	356	4340	0.60	390	4750	0.80
5	20	26 $\frac{3}{4}$	58 $\frac{1}{4}$	45 $\frac{3}{4}$	46 $\frac{3}{4}$	56 $\frac{3}{4}$	248	4150	0.35	287	4790	0.53	320	5350	0.74	351	5870	0.98
5 $\frac{1}{2}$	22	28 $\frac{3}{4}$	63 $\frac{1}{4}$	49 $\frac{1}{4}$	50 $\frac{1}{4}$	62 $\frac{1}{4}$	225	5020	0.42	260	5800	0.65	291	6470	0.90	319	7100	1.19
6	24	31 $\frac{1}{4}$	69 $\frac{1}{4}$	54 $\frac{1}{4}$	55 $\frac{1}{4}$	68 $\frac{1}{4}$	207	5970	0.50	239	6900	0.77	267	7710	1.07	292	8450	1.41
6 $\frac{1}{2}$	26	33 $\frac{1}{4}$	75 $\frac{1}{4}$	59 $\frac{1}{4}$	60 $\frac{1}{4}$	79 $\frac{1}{4}$	177	8130	0.68	205	9400	1.05	229	10490	1.46	251	11500	1.92
7	28	36 $\frac{1}{4}$	81 $\frac{1}{4}$	64 $\frac{1}{4}$	65 $\frac{1}{4}$	90 $\frac{1}{4}$	155	10610	0.89	179	12260	1.37	200	13700	1.91	219	15020	2.51
8	32	42	92 $\frac{1}{4}$	72 $\frac{3}{4}$	73 $\frac{3}{4}$	101 $\frac{1}{4}$	133	13450	1.12	159	15520	1.73	178	17440	2.41	195	19000	3.18
9	36	47 $\frac{1}{4}$	103 $\frac{1}{4}$	81 $\frac{3}{4}$	82 $\frac{3}{4}$	113 $\frac{1}{4}$	124	16580	1.39	168	18680	2.14	180	21400	2.98	204	23460	3.93
10	40	52 $\frac{1}{4}$	114 $\frac{1}{4}$	90 $\frac{3}{4}$	91 $\frac{3}{4}$	124 $\frac{1}{4}$	113	20070	1.68	187	23180	2.58	146	25800	3.60	160	28390	4.75
11	44	57 $\frac{1}{4}$	126 $\frac{1}{4}$	99 $\frac{3}{4}$	100 $\frac{1}{4}$	136 $\frac{1}{4}$	104	23880	2.00	194	27690	3.08	133	30820	4.29	146	33780	5.65
12	48	63	137 $\frac{1}{4}$	109 $\frac{3}{4}$	110 $\frac{3}{4}$	147 $\frac{1}{4}$	95	28040	2.35	119	32370	3.61	123	36180	5.03	135	39650	6.63
13	52	68 $\frac{3}{4}$	149 $\frac{1}{4}$	117 $\frac{3}{4}$	127 $\frac{1}{4}$	158 $\frac{3}{8}$	89	32520	2.72	102	37550	4.19	114	41950	5.84	125	45990	7.69
14	56	73 $\frac{3}{4}$	160 $\frac{3}{4}$	126 $\frac{3}{4}$	127 $\frac{1}{4}$	170 $\frac{1}{4}$	83	37330	3.13	96	43100	4.80	107	48160	6.70	117	52790	8.83
15	60	78 $\frac{3}{4}$	168 $\frac{3}{4}$	135 $\frac{3}{4}$	136 $\frac{1}{4}$	181 $\frac{3}{8}$	78	42470	3.56	90	49400	5.47	100	54790	7.62	110	60060	10.10
16	64	84	183 $\frac{1}{4}$	144 $\frac{3}{4}$	154 $\frac{1}{4}$	192 $\frac{1}{8}$	73	47560	4.01	84	55370	6.17	94	61860	8.60	103	67500	11.40
17	68	89 $\frac{3}{4}$	194 $\frac{3}{4}$	153 $\frac{1}{4}$	163 $\frac{1}{4}$	204 $\frac{1}{8}$	69	53750	4.49	80	62060	6.92	89	69340	9.64	98	76010	12.70
18	72	94 $\frac{3}{4}$	205 $\frac{1}{4}$	162 $\frac{1}{4}$	172 $\frac{1}{4}$	215 $\frac{3}{8}$	65	59580	5.00	75	69160	7.71	84	77260	10.80	92	84700	14.20
19	76	99 $\frac{3}{4}$	217 $\frac{1}{4}$	171 $\frac{3}{8}$	181 $\frac{3}{8}$	227	62	66860	5.56	72	76640	8.54	80	85600	11.90	85	93550	15.70

SCANNED BY: AEM OF LOCKPORT NY USA

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NOTE: THIS DOCUMENT WOULD HAVE SPECS ADDED

ONTO PAGE 1 FOR THE MACHINERY PURCHASED

NOTE: ORIGINAL DOCUMENT HAD WATER DAMAGE